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Japanese Publication for Patent No. 2650479

(Registered on May 16, 1997)

A. Relevance of the Above-identified Document

This document has relevance to all of the claims of the present application.

B. Translation of the Relevant Passages of the Document

See the attached English Abstract.

PROBLEMS TO BE SOLVED BY THE INVENTION

However, with a conventional liquid crystal control circuit and a driving method thereof, a response of a liquid crystal is slow. Namely, it causes a ghosting image, because 3 to 4 or more fields are required before reaching to a predetermined transmittance after a voltage impression. The ghosting image is a phenomenon in which an outline of the image displays the image of a previous field like a shadow; because, when a displayed image changes, a transmittance of the liquid crystal does not change, following the impression of voltage to a pixel. This phenomenon takes place when the image moves faster than a certain speed, and causes a significant deterioration in a quality of the image.

In the view of the foregoing problem, an object of the present invention is to provide a liquid crystal control

circuit and a liquid crystal panel driving method, which can be used for an image display of large screen and an image of a high resolution.

MEANS TO SOLVE THE PROBLEMS

In order to solve the foregoing problem, a liquid crystal control circuit according to the present invention includes:

a memorizing means for memorizing a first signal data, the first signal data equivalent to a voltage to be impressed to a liquid crystal;

a computing means for computing the first signal data and a second signal data, the second signal data equivalent to the voltage to be impressed to the liquid crystal after the first signal data; and

a correction means for correcting signal data in a plurality of fields after the first signal data, based on a result of a computation by the computing means, the signal data being to be consecutively impressed to the liquid crystal.

The liquid crystal control circuit according to the present invention includes:

a first memorizing means for memorizing the first signal data, the first signal data equivalent to a voltage to

be impressed to the liquid crystal;

a computing means for computing the first signal data the second signal data, the second signal data equivalent to the voltage to be impressed to the liquid crystal after the first signal data;

a correction means for correcting, based on the result of the computation by the computing means, at least one of the second signal data or a third signal data, the third signal equivalent to the voltage to be impressed to the liquid crystal after the second signal data; and

a second memorizing means for memorizing that the signal data is corrected based on a first threshold or a second threshold,

where

the first threshold is a value to be corrected based on the result of the computation of the first signal data and the second signal data; and

the second threshold is a value to be corrected when the computing means computes signal data having the same address, over a plurality fields, and results of the computation of the signal data having the same address surpasses a predetermined value a plurality of times.

Further a liquid crystal panel driving method according to the present invention having first signal data

equivalent to a voltage impressed to a liquid crystal includes the steps of:

computing the first signal data and a second signal data, the second signal data equivalent to the voltage to be impressed to the liquid crystal after the first signal data; and

correcting, based on a result of the step of computing, signal data in a plurality of fields after the first signal data, the signal data being to be consecutively impressed to the liquid crystal.

Further, another liquid crystal panel driving method according to the present invention includes the steps of:

impressing a voltage whose absolute value is greater than V_2 in the second field or a third field following a second field; and

impressing a voltage less than V_2 in a following field of the third field,

where

V_2 is an absolute value of a second voltage being to be impressed to the pixels, having a relationship of $V_1 < V_2$ in a second field following the first field; and

V_1 is an absolute value of a voltage being impressed to arbitrary pixels of a first field.

(BRIEF DESCRIPTION OF THE DRAWINGS)

Fig. 1 and Fig. 2 are block diagrams of a first liquid crystal control circuit in accordance with the present invention. Fig. 3 is a data table.

Fig. 4 and Fig. 6 are an explanatory diagram showing a driving method for the first liquid crystal control panel in accordance with the present invention.

Fig. 5 is a graph showing properties of an impressed voltage and a response time of a liquid crystal.

101, 1001, 1501	Gain control circuit,
102, 108, 1002, 1012,	
1502, 1506	Lowpass filter,
103, 1003, 1503	A/D converter,
104, 205, 206, 207, 1004,	
1005, 1006, 1007	Field memory,
105, 208, 1008	Computing device,
106, 209, 1009	Correcting device,
107, 1011, 1505	D/A converter,
109, 1013, 1507	Phase-splitting circuit,
110, 1014, 1508	Output switching circuit,
111, 1015, 1509	Driver control circuit,
112, 1016, 1510	Source drive IC,
113, 1017, 1511	Gate drive IC,

114, 1018, 1512	Liquid crystal panel,
201, 202, 203, 204	Field memory switching circuit,
210, 301, 1010	Data table,
1504	Data processing block,
1601	Field memory block,
1602	Data input means,
1603	Data processing means,
1604	Data table,
1605	Data outputting means

Fig. 1

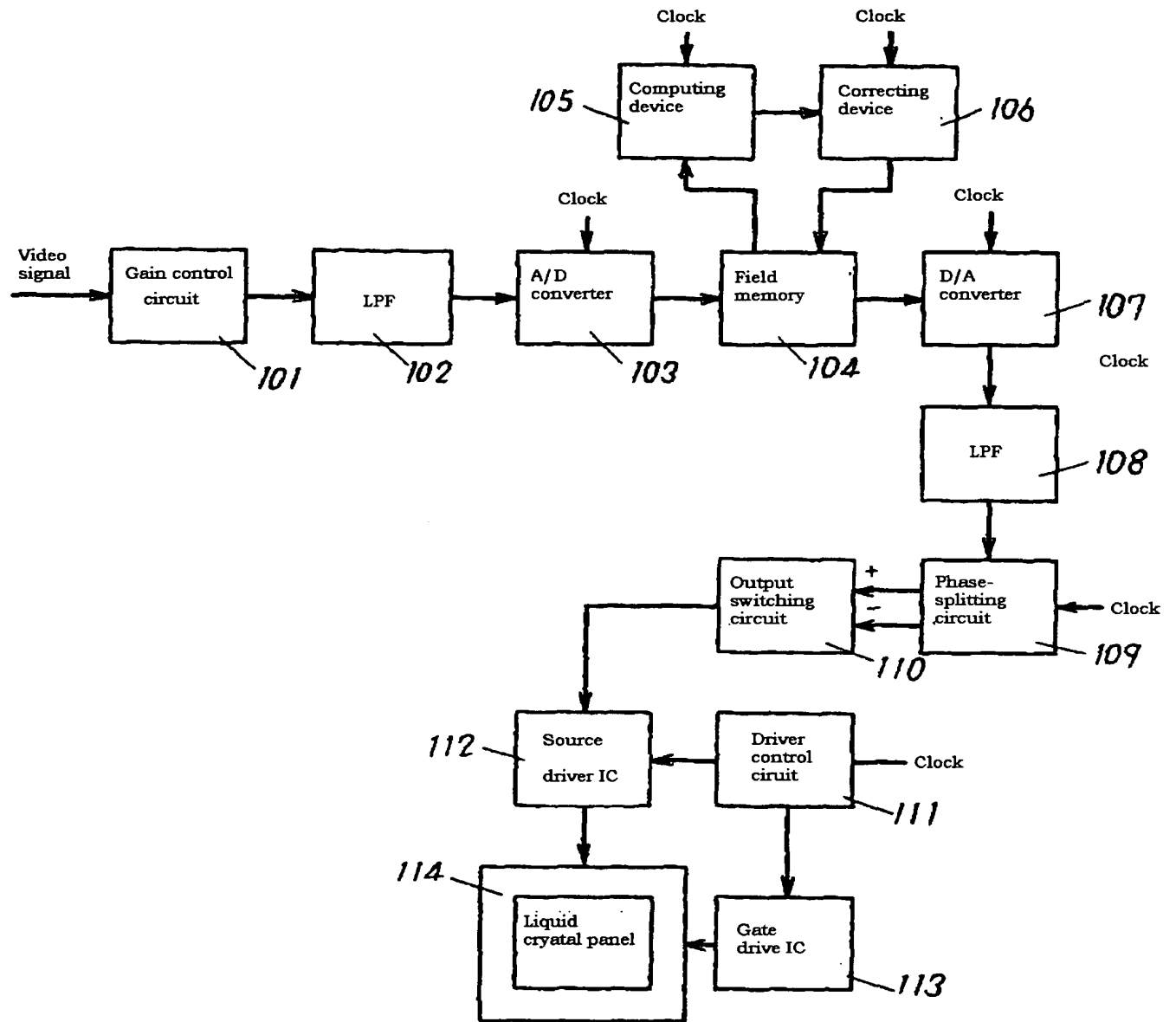


Fig. 2

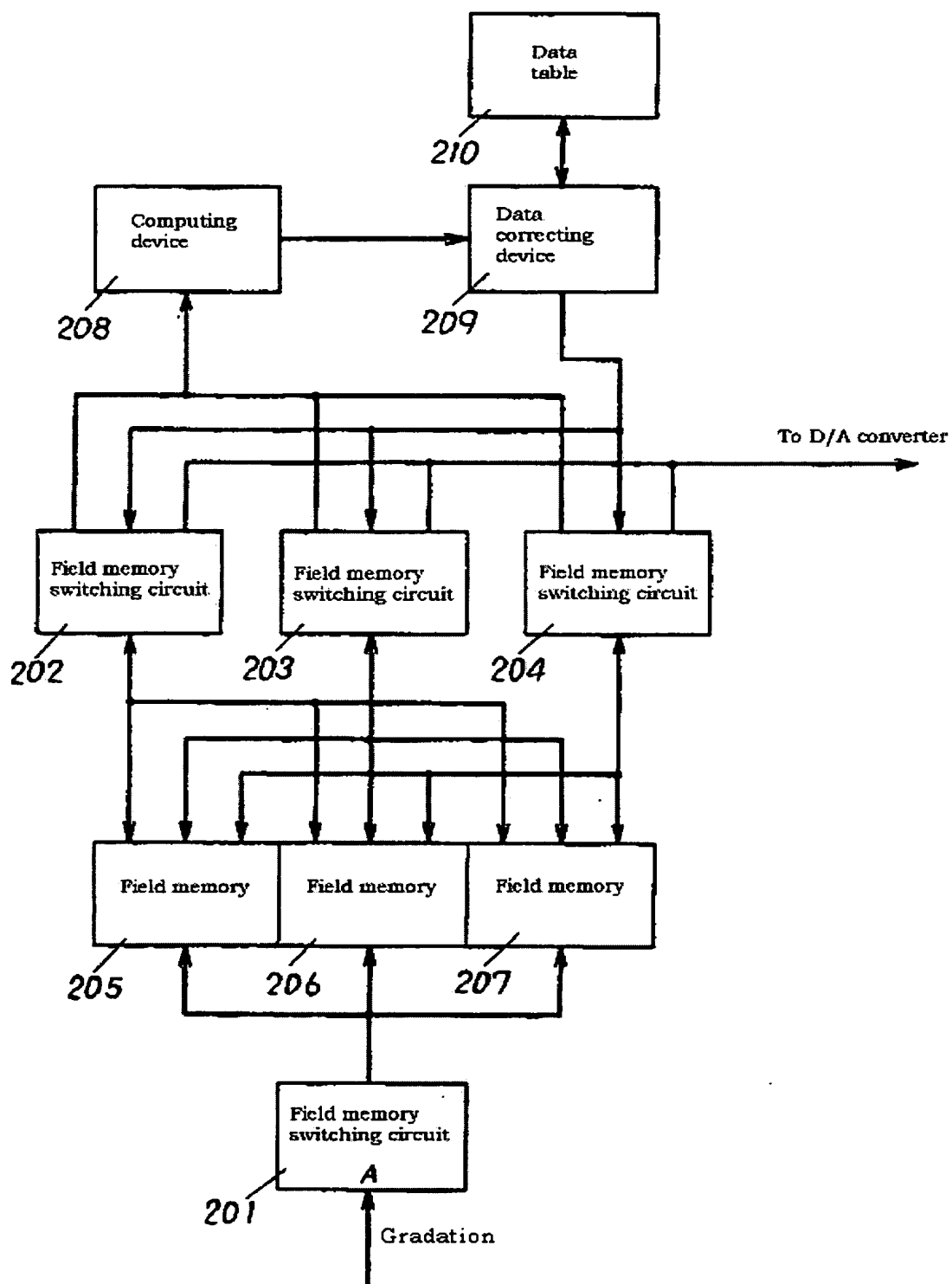


Fig. 3

301 --- Data table

	D1	D2	-----	Dm
$\Delta V1$	D7	D6	-----	D1
$\Delta V2$				
ΔVn				

301

Fig. 4

